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COMPETITION AND CAPITAL

THE country has become largely persuaded that the railroad industry is harmed by competition, and that for it a system of monopoly, controlled by the government, will yield on the whole the best results. The extremely destructive nature of competition among railroads is due, fundamentally, to the large proportion which the vested capital[1] bears to the annual earnings.[2] The abuses to the shippers, such as rebates and special advantages, also result almost inevitably from competition among railroads. The large proportion of fixed capital makes the general costs very high in comparison to the particular costs. Whenever the railroad plant is underutilized, there is an advantage in securing new business, which could not otherwise be secured, at any price sufficient to pay anything above the particular costs. This practice results in disadvantages to both shippers and railroads. For these reasons, the attitude of the government has been largely influenced by the recognition that the monopoly principle in respect to railroads is of greater social benefit than the competitive principle.[3] The thesis to be maintained in this paper is that certain manufacturing industries are so predominantly " capitalistic " in their nature that the same general line of reasoning is as applicable to them as it is to the railroads.[4]

It is first necessary to recall certain fundamental principles. From the social point of view, the object of industry is the creation of wealth in the most efficient and economical manner. Accordingly, the technique of each industry should be so arranged that the net creation of wealth shall be as great as possible. Regarded from this viewpoint, neither the system of competition nor that of monopoly is of importance as an end in itself, but only as a means by which wealth may be created in the most efficient manner. Indeed, in their essence, the two systems are not opposed to each other, as is commonly believed, but are rather complementary. For the social ideal of the competitive régime is the survival of the competitor who is able to sell at the lowest price, which is monopoly; and the social ideal of monopoly is that prices should at all times be governed by fear of the potential rival, which is competition.[1] In the modern industrial world, this happy condition is prevented through the great amount of capital necessary to establish certain industries, so that potential competition has very little, if any, effect on the prices of the monopolist. From this fact arises the whole of the so-called trust problem. The preponderance of fixed capital necessary in certain industries is the kernel of the question.

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[1] Capital is used in the sense of the future incomes vested in an article, and which it is estimated will accrue to the owner at some future period. Fetter's Principles of Economics, p. 122.

[2] *Vide infra.*

[3] This is true only in regard to the Interstate Commerce Commission. It is not true of the suits brought against railroads under the Sherman Act, for the decisions in these cases are based upon anticipations of expected benefits from the reëstablishment of competition between railroads.

[4] Grateful acknowledgment is made that the germ of this idea is due to Professor Seager.

The purpose of the competitive system is constantly to displace more expensive methods by cheaper ones. It thus exerts a disturbing influence, especially in the highly "capitalized" industries, because it tends to destroy the future incomes vested in the industries through the introduction of the better processes. New sources of income are created; but the old ones are destroyed. The social gain consists in the new capital (i. e., the capitalized value of the new incomes); the social loss lies in the capital which has been destroyed. Under the competitive system these are not directly compared, since the loss is borne by one set of persons and the gain is made by others. When phonographs were invented, the large amount of capital invested in music boxes was suddenly rendered worthless. Had the owners of the new phonograph patents also owned the music-box factories, they would have been more chary about destroying the capital already invested. No social balance wheel exists by which the gains and losses may be adjudged from the standpoint of society as a whole. A monopoly, on the other hand, must compare these items, for it suffers the loss as well as secures the gain; hence it is slow to adopt a new invention. It waits until the old capital is largely worn out before it introduces the new method. The gain must be so great that it will be a recompense not only for the new capital invested, but also for the incomes which would have been derived from the old capital, but which have been destroyed. Now the interest of society as a whole is similar to that of a monopoly; it suffers the losses as well as secures the gains. Yet ordinarily no effort is made to compare these as they affect society. The greater the proportion of fixed capital, the more destructive is a change. The corner grocer, who has little fixed capital, if defeated in the competitive struggle can easily sell his stock at comparatively little loss. His goods may be sold for bargain prices, his store fitted out for some other purpose, and he himself can find another job. But the loss when a highly specialized modern factory goes to the wall because a cheaper process has been invented is the total value of its capital, namely, the present discounted value of the large, prospective, future incomes which it had represented. It might be argued that even in this event there would be a social gain, since the public would get the article more cheaply than formerly. This view is due to a too narrow conception of the forces involved. It is true that there is a certain gain, represented by the difference between the two methods of manufacturing; but there is a loss due to what the same capital would have earned if it had been used in some other manner which did not involve the destruction of existing capital. The loss is hidden, but none the less real.[1]

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[1] *Cf.* R. Liefmann, "Monopoly or Competition as the Basis of a Government Trust Policy," in the *Quarterly Journal of Economics*, February, 1915, pp. 308–325.

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[1] A defence of the competitive system might be built up on the argument that, in spite of such individual losses, the general welfare is still promoted by encouraging initiative in every way, especially since one invention often leads to others. The scheme proposed in this paper would, however, only discourage invention in a few industries; and in these industries inventions are pretty well regulated by the semi-monopoly power of the large corporations and banks. It seems as if the government

The railroads furnish an example of the possible anti-social effect of a change, which would be individually profitable. Should an entire new railroad system be built, with tracks six feet apart, which exactly duplicated the present lines whose tracks are four feet, eight and a half inches apart, the saving in costs on account of the more powerful engines and longer trains would probably be such as to render valueless the present lines. Freight rates might perhaps profitably be cut in two by the new system, so that no one would ever ship over the old lines. The public would unquestionably gain by the lower freight rates, but in order to make the change profitable in a national sense the gain must be great enough to replace all the dividends and interest on the stocks and bonds of the old line. It is just this comparison that we do not make. We permit anyone to do anything if it is profitable to him individually, no matter what the effect on the rest of the country. The only fact that prevents this occurrence from taking place is that the financial institutions, with enough capital to put through such a scheme, have also sufficient monopoly power to prevent the experiment from being made. Since so large a part of their loans are secured by railroad stocks and bonds, they naturally are interested in maintaining the value of the present system. But this power may not always be used so happily, since the banks may be equally interested in preventing changes of all sorts, no matter what their effect on the country at large.

An extreme example will perhaps illustrate how the principle operates, although it will be recognized that only rarely does it work so drastically or in such a clean-cut manner. In an industry in which $100,000,000 capital is invested, which has been yielding to its owners an annual income of $5,000,000 (5 per cent being the ordinary rate of interest), a superior, new machine is invented, of such a revolutionary character that it reduces costs by $2,000,000 annually and competes with all existing machinery. Through the reduced cost, prices may be

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could artificially foster invention, at least as much as it is encouraged under present conditions. We have not today a complete competitive system as a matter of fact; and monopolies, in so far as they exist, are not adequately controlled by any power sufficiently lowered to make it unprofitable to continue operating the old machines. It is found that $80,000,000, invested in the new machines, will be sufficient to supply the demand for these goods. There is clearly a social gain through the saving of $2,000,000 annually; but there is a loss in the destruction of the incomes formerly enjoyed. The social inventory, $180,000,000 capital being involved in each case, would be:

Original Condition

CAPITAL	INCOME
From 1st, $100,000,000	$5,000,000
From 2nd, 80,000,000	potential

Under Competitive Conditions

From 1st, $100,000,000	nothing (the $5,000,000 income being destroyed)
From 2nd, 80,000,000	$4,000,000 (to owners)
	2,000,000 (to public in lower prices)
	Total $6,000,000

Under conditions of maximum advantage, when the new capital is invested in other enterprises which involve no destruction of existing capital:

From 1st, $100,000,000	$5,000,000
From 2nd, 80,000,000	4,000,000
	Total $9,000,000

Now had the $80,000,000 of new capital been used in some entirely new industry, where it yielded to society goods representing $4,000,000 worth of income without destroying any existing income, clearly society would have been better off. And yet, if the inventor could gain for himself any part of the $2,000,000 which his new process saves in the cost, and thus get a return above five per cent on his new investment, it would be profitable for him to do so, regardless of the effect upon others or national benefit. Only rarely does this principle operate in so drastic a manner. Generally there is some chance to use up, at least partially, the old machines.

With this contrast clearly in mind, we may now turn to an examination of the relation between capital and income in our various industries. The total capital invested in the railroads[1] in 1910 was $14,387,816,000, and the total gross income was $2,812,142,000, or 19.54 per cent of the capital.[2] The capital invested in manufactures in 1910 was $18,428,270,000, and the total value added by manufacturing[3] was $8,529,261,000, or 46.28 per cent of the capital. While the proportion in manufacturing as a whole which the annual added value bears to the capital is thus very much greater than in the case of the railroads, showing a much smaller preponderance of fixed capital, a close parallel is disclosed through an analysis of individual manufacturing industries.

The tables on pages 584 and 585 show the two extremes of relationship.

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[1] All the amounts of capital are par value. They are thus only approximately accurate. The actual investment amounts are unknown. It is reasonable to expect, however, that variates from the mean will about counterbalance each other. An exception will be found in the automobile industry, which for special reasons is disproportionately overcapitalized.

[2] Compilation in Matter of Application of Eastern Railways for Increase of Freights, 1913. I am indebted to Mr. A. S. Field, of the Bureau of Railway Statistics, for help in determining the comparability of these figures. In this table there is an item entitled, "Materials, supplies, etc.," a permissible interpretation of which might lead to finding a partial similarity with the item, "cost of materials," in the manufacturing industries. Accepting this interpretation, it would be necessary to subtract this item of $738,154,000 from the gross income, leaving $2,073,058,000 as the value added by railroads, which is 14.41 per cent of the capital. This is the extreme low relationship of the two figures and its acceptance does not materially affect the argument. The reason that this figure is not accepted in the text is because the item in the case of railroads is an integral part of the cost of transportation, whereas, in the case of manufactures, the cost of materials includes those articles which are passed through a process of manufacturing, and are, themselves, an item in the final value.

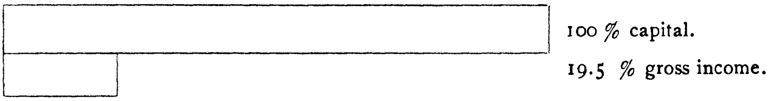
[3] 13th Census of the United States, volume 8, pp. 507 ff.

TABLE I

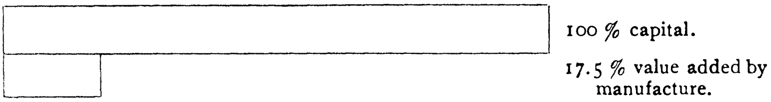
NAME OF INDUSTRY	CAPITAL (000 OMITTED)	VALUE ADDED BY MANUFACTURING (000 OMITTED)	PER CENT
1. Lead: bar, pipe and sheet	$20,587	$1,733	8.42
2. Moving pictures	19,428	2,014	10.31
3. Smelting: refining lead	132,310	15,443	11.67
4. Gas: illuminating and heating	915,537	114,380	12.49
5. Malt	60,286	7,788	12.92
6. Iron and steel blast furnaces	487,581	70,791	14.52
7. Beet sugar	129,629	20,857	16.09
8. Cement	187,398	33,861	18.09
9. Kaolin and ground earths	13,226	2,639	19.95
10. Sugar and molasses, not including beet sugar	153,167	31,666	20.67
11. Petroleum, refining	181,916	37,725	20.75
12. Coke	152,321	31,672	20.79
13. Salt	29,012	6,125	21.11
14. Rice, cleaning, polishing	13,347	2,870	21.50
15. Wood distillation, not including turpentine and rosin	13,017	3,861	21.98
16. Liquors: vinous	27,908	6,495	23.27
17. Leather: tanned, curried and finished	332,727	79,595	23.92
18. Acids: sulphuric, nitric and mixed	18,726	4,498	24.02
19. Paving materials	11,410	2,751	24.11
20. Grind stones	4,939	1,220	24.70
21. Paper and wood pulp	409,348	102,215	25.00
Total	$3,313,820	$580,189	17.51

These relations between railroads and the industries in the two tables are shown more clearly in the following diagrams:

Railroads.



Industries in Table 1.



Industries in Table 2.

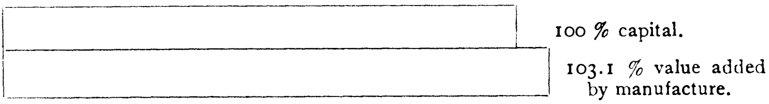


Table II

NAME OF INDUSTRY	CAPITAL (000 OMITTED)	VALUE ADDED BY MANUFACTURING (000 OMITTED)	PER CENT
1. Clothing, men's buttonholes	$225	$676	300.44
2. Clothing, sponged, refinished	229	1,459	246.26
3. Liquors, distilled	72,450	168,722	232.87
4. Turpentine and rosin	12,401	20,384	164.38
5. Electro-plating	2,324	3,305	142.21
6. Hats and caps, other than felt, straw and wool	5,275	6,999	132.66
7. Engraving and dies inking	1,449	1,899	131.05
8. Statuary and art goods	2,221	2,762	124.35
9. Carpets, rag	1,546	1,879	121.54
10. Stereotyping and electrotyping	3,826	4,619	120.72
11. Millinery and lace goods	35,705	40,854	114.42
12. Hair work	4,716	5,135	108.88
13. Models and patterns, not including paper patterns	5,576	5,992	107.42
14. Hand stamps, stencils and brands	2,439	2,546	104.39
15. Jewelry and instrument cases	1,841	1,895	102.93
16. Blacking, cleansing and polishing preparations	7,557	7,717	102.11
17. Clothing: men's, including shirts	275,320	270,562	98.27
18. Tobacco manufactures	245,660	239,504	97.49
19. Glass cutting, staining and ornamenting	10,296	9,855	95.71
20. Furs, dressed	1,672	1,580	94.79
21. Gold and silver leaf and foil	1,184	1,112	93.92
22. Lasts	3,061	2,835	92.61
23. Patent medicines, compounds and druggists' preparations	99,942	91,566	91.62
24. Signs and advertising novelties	9,647	8,837	91.60
25. Printing and publishing	588,346	536,101	91.11
Total	$1,395,308	$1,438,800	103.11

The total capital invested in the 21 industries of Table 1 is $3,313,820,000 and the total value added by these industries is $580,189,000, or 17.51 per cent of the capital. The same figures for the 25 industries of Table 2 are, respectively, $1,395,308,000 and $1,438,800,000, the latter being 103.11 per cent of the former. Between these two groups lies the largest number of industries, which it is difficult to classify accurately with either. The difference between the two extremes, however, is clear. A new invention which should throw out of existence all the vested capital in one of the industries of Table 1, would destroy 5.7 years' income, whereas the same occurrence in an industry of Table 2 would destroy less than the income of a single year. Likewise the amount of insurance to be set aside against risk of this sort, which must be borne by the public in the form of higher prices, must be proportionately larger in the industries of Table 1. Thus the industries of Table 1 are dependent on stable conditions in order to perform their best social service. Every change is accompanied by a heavy loss. On the contrary the industries of Table 2 can shift with comparative ease from place to place and from method to method. They approach the fluidity of capital on which the reasoning of the older economics is based.

In this respect, then, the industries of Table I resemble far more closely the railroads than they do the industries of Table II. In fact, should the railroads be included among these industries they would rank only as ninth in the list of twenty-two.

That these differences in the technique of different industries are of vital importance is further shown by the following table:

TABLE III [1]

NAME OF INDUSTRY	PER CENT OF TOTAL VALUE ADDED BY MANUFACTURE, WHICH IS ADDED BY ESTABLISHMENTS OF OVER $1,000,000 PRODUCT PER ANNUM
1. Sugar refining, not including beet sugar	100.0
2. Smelting and refining, lead	99.0
3. Smelting and refining, copper	98.1
4. Phonographs and graphophones	94.8
5. Boots and shoes, rubber	93.8
6. Pencils, lead	93.7
7. Iron and steel, steel works and rolling mills	88.6
8. Tin plate and terneplate	87.7
9. Iron and steel, blast furnaces	84.6
10. Glucose and starch	84.6
11. Petroleum, refining	82.9
12. Slaughtering and meat packing	82.4
13. Wire	78.2
14. Smelting and refining, zinc	76.9
15. Rubber goods, not elsewhere specified	76.8
16. Iron and steel pipe, wrought	76.8
17. Cars, steam railroad, not including operations of railroad companies	75.6

A considerable degree of similarity will be noted between these industries and those comprising Table 1. As opposed to these industries of large concentration, there are 78 industries out of the 248 reported which have not a single establishment of over $1,000,000 annual product.

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[1] 13th Census of the United States, vol. viii, pp. 196-199.

An examination of manufacturing thus shows striking variations in regard to the importance of fixed capital, and the advantage of large-sized establishments. The advocacy of free competition by the early economists was premised on the free movement of labor and capital, which even at that time was only partially realized. Today, in certain industries, such free movement is wholly absent. The shifting of fixed capital is out of the question. Under competitive conditions it is even impossible to use old capital until it is worn out. Only with some degree of monopoly power—as, for instance, in the case of the American Telephone and Telegraph Company, which is able to put off the introduction of new instruments and devices until the maximum benefit from the old ones has been derived—is such a thing possible. Business men are forced to adopt questionable methods for the discouragement of radically new inventions, when these interfere with the value of vested capital. Refusal of loans by the banks is one of the most effective ways of doing this. The motive power governing their actions must be in terms of individual advantage, no matter what the national advantage demands. On the other hand their methods, though often extra-legal or illegal, may make for national efficiency. It is a matter of chance whether they promote or retard social advance, since the country is making no intelligent effort to control the situation. The rigors of the competitive system, in industries which demand stable conditions, necessitate the formation of more or less formal pools, trusts or understandings, which approach monopolistic combinations. The greater the fixed capital in the form of highly-specialized machinery, the more necessary is it to control the conditions of the industry. Because we have made laws condemning monopoly in every form of industry, the development of monopoly has been sporadic and has had no relation to the interests of the country at large.

If the point of view taken in this paper be a correct one, then there are differences in the facts of manufacturing industries which call for differences of treatment, if our object be to develop them to their fullest capacity and to gain from them the greatest possible benefit. Instead of regarding the railroads as different in their very nature from all manufactures, in that they alone develop their greatest usefulness under a system of regulated monopoly, we should recognize that some manufactures have this characteristic almost as highly developed and that the two merge by gradual gradations into each other. The determination of the line which separates industries which on the whole will operate most beneficially as regulated monopolies, from those which will develop most successfully under the competitive system, is one of great practical difficulty, requiring further information and careful experimentation. But surely the line should be drawn with a view to national interests, instead of individual interests as it is today. The failure to recognize differences where they exist (at the extremes, at least, it seems that this must be clear) is to fly in the face of common sense.

Acceptance of the above principle would raise grave doubts as to whether the public was benefited by the destruction of the Standard Oil Trust and the Tobacco Trust, due as it was in each instance to legal rather than to economic reasoning. The relation of capital to annual added value in the oil business is as five to one; in the tobacco business they are about equal. The two industries are fundamentally different and should be treated differently. The destruction of capital through competition in the tobacco industry is negligible; in the oil business the risk is tremendous and must be insured against by means of higher prices, which the public must pay.

The same problem is raised in the pending suit against the International Harvester Corporation. In the manufacture of agricultural implements the annual added value is 33.6 per cent of the vested capital, the figures being $86,022,000 and $256,281,000, respectively.[1] In view of the facts, the real question is whether this industry ministers best to national efficiency under a monopolistic or competitive régime. Yet this aspect of the suit has not been touched upon in the recent brief of the Attorney-General, and we may well inquire whether the decision of the Supreme Court will be on a basis of some technical rule of law or on one of national welfare. Indeed it must be settled according to the general principles of law, for we have no machinery to regulate the industry effectively, even if we should decide that it would be more beneficial under the monopolistic principle. In the suit against the United States Steel Corporation the problem is complicated by the fact that in some branches of the industry vested capital is more important than in others. For the purposes of this article it is sufficient to point out the basis on which the answer should be given, rather than the answer itself.

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[1] 13th Census, vol. viii, p. 507.

It is not to be understood that in the industries in which competition is accepted as the guiding principle it is meant to imply unregulated competition to the point of anarchy. Competition has always been carried on under certain regulations, the only practical question being whether the regulations are in accord with conditions as they exist, or whether they are the inherited laws of an age which has gone by. There was regulation even in the most flourishing days of the *laissez-faire* period; but it bore no relation to the changed aspects of industry which had developed since the laws were framed. This condition is almost as true of the industry of today as it was of that of half a century ago.[1]

The natural error of the government lies in its identification of competition and maximum production. The competitive struggle breeds monopoly, not more competition. And the entrenched position so gained is as great a social detriment as the stagnation due to government ownership would be. The position of a new invention in photography, for example, is no more advantageous under the former than the latter. Practically it cannot be employed independently of the Eastman Kodak Company (unless it were of such an extraordinary nature that it could put the present company out of business) and hence that company can purchase it at its own price—to be utilized or forgotten as may be most profitable. The position of the National Cash Register Company, and the General Electric Company in certain fields, is similar. That is, in these fields, new inventions are not today encouraged by a natural process. They might be fostered artificially by a generous government stipend quite as successfully. Moreover, laws could be made penalizing the non-use of inventions. The interplay of the forces of industry is extremely complex and cannot be successfully solved by the blanket application of simple principles.

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[1] *Cf.* W. H. Stevens's "Unfair Competition," POLITICAL SCIENCE QUARTERLY, vol. xxix, pp. 282–306, 460–490.

Our laws do not correspond to the facts of industry. They bow before the fetish of competition apparently as an end in itself. Suggestions of a modification of this attitude in the latest decisions of the Supreme Court were, in part, nullified in the recently enacted Clayton Act. If the argument presented in this paper is sound, then no single law can be framed which meets the problem presented by the complex of industry in a socially beneficial manner, and we must look to the further discrimination of the courts and the trade commission to adopt a policy which shall recognize conditions as they exist, and determine the proper differentiation which alone can bring order out of the present chaos.

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